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Specifications subject to change without notice.
P/N CX606 Rev C 4/22/02

Warranty

Monroe Electronics, Inc. warrants to the owners, each instrument and sub-assembly manufactured by them to be free from defects in material and workmanship for a period of two years after shipment from factory. This warranty is applicable to the original purchaser only.

Liability under this warranty is limited to service, adjustment or replacement of defective parts (other than fuses or batteries) on any instrument or sub-assembly returned to the factory for this purpose, transportation charges prepaid.

This warranty does not apply to instruments or sub-assemblies subjected to abuse, abnormal operating conditions, or unauthorized repair or modification.

Since Monroe Electronics, Inc. has no control over conditions of use; no warranty is made, or implied as to the suitability of our product for the customer's intended use.

THE WARRANTY SET FORTH IN THIS ARTICLE IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES AND REPRESENTATIONS, EXPRESSED, IMPLIED OR STATUTORY INCLUDING, BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS. Except for obligations expressly undertaken by Monroe Electronics, in this warranty, Owner hereby waives and releases all rights, claims and remedies with respect to any and all warranties, express, implied or statutory (including without limitation, the implied warranties of merchantability and fitness), and including but without being limited to any obligation of Monroe Electronics with respect to incidental or consequential damages, or damages for loss of use. No agreement or understanding varying or extending the warranty will be binding upon Monroe Electronics unless in writing signed by a duly authorized representative of Monroe Electronics.

In the event of a breach of the foregoing warranty, the liability of Monroe Electronics shall be limited to repairing or replacing the non-conforming goods and/or defective work, and in accordance with the foregoing; Monroe Electronics shall not be liable for any other damages, either direct or consequential.

Return to Factory Policy

Materials returned to Monroe must have a Return Material Authorization number. To obtain a RMA number, contact our A/V Switching & Control Customer Service at 585-765-2254 or fax 585-765-9330. Customers have 30 days to determine that the product ordered fills their need and performs as described in Monroe's literature. Units returned for approved repair or credit, must be in the original packaging including all parts and paperwork plus be in very good physical condition. If not, the customer is billed the cost to refurbish the unit and for missing accessories and merchandise. No products may be returned for exchange or credit after 12 months of the shipment date. Monroe reserves the right to repair or replace units under warranty.

Equipment Included

CEMS 0500 - 19-inch rack mount unit

Power Supply – 12 Volt wall mount with 4 foot cord

Cable CX506S – 9 pin null modem data cable
Cable CX508S – 2 wire audio cable, tinned leads

1 – 6 position terminal plug (EAS Audio and Relay)
2 – 6 position terminal plugs (Channel Audio)
1 – 3 position terminal plug (AUX Relay)
1 – 4 position terminal plug (Output 4.5 Modulator)

CEMS 0500 Installation Guide

Specifications

Video Interface:
Video In (1V p~p 75Ω) BNC
Video Out (1V p~p 75Ω) BNC
Auxiliary In (1V p~p 75Ω) BNC

Audio Interface:
Audio In Stereo (600Ω Balanced)
Audio Out Stereo (600Ω Balanced)

EAS Relay:
Normally open & closed dry contact, 6 pin terminal connector

AUX Relay:
Normally open & closed dry contact, 3 pin terminal connector

PC/Modem Port:
RS232 data, male 9 pin "D" connector
9600 baud, 8 bits, no parity, 1 stop

EAS Data Port:
RS232 data, male 9 pin "D" connector
9600 baud, 8 bits, no parity, 1 stop

Output 4.5 Modulator:
Baseband EAS audio out, 4 pin terminal strip
+5V DC

Power Requirements:
External Supply
Input 120VAC @ .4 amps
Output +12 VDC @ .125 amps

Physical Size: 19.0"W x 1.75"H x 5.0"D (IRU)

Unit Weight: 4 lbs

Product Overview

Monroe's CEMS 0500 Character Generator produces a high quality text display with up to 28 characters per line and 11 lines per full page of text. Each character is 18 scan lines high by 12 dots wide and may be displayed as white characters on a blue, green or red background. Characters may also be displayed as a 'crawl' or text overlaid on either the primary or auxiliary video signal.

The CEMS 0500 includes audio override circuitry and relays, for use in activating system overrides during EAS alerts or for subscriber messaging.

EAS Override Features

The CEMS 0500 Character Generator provides an override of a channel's audio and video signals whenever an EAS transmission signal has been received. Override of the video signal may be by either, a full screen replacement of the video signal with a videotext message, or by displaying a 'crawl' or text message over a video channel. The CEMS 0500 accepts data and audio signals from an EAS Encoder/Decoder and automatically creates a videotext display of the EAS message. During an override condition, a relay contact closure is provided to activate external video and audio override equipment. Once the override is activated, the CEMS 0500 passes the received EAS audio signal to the system.

External override equipment is used to display the EAS message alert video and audio on all channels within the cable system. All channel override equipment may be implemented by either; a comb generator to override RF signals, baseband audio and video switching, or by IF switching.

Command Mode Features

The CEMS 0500 may be controlled using a PC or another data transfer device for displaying messages to subscribers or for performing override functions required by the cable company. Command strings transferred from the controlling device are used to select, activate display, and override feature controls of the CEMS 0500.

Command strings may be used to activate alternate display modes, such as multi-page displays, text crawls on the top or bottom of the display, or text captions. Command strings, are also used to select background colors, duration of message display, primary or auxiliary channel selection etc. An alternate relay may be wired and commanded to substitute an alternate audio source for non-EAS applications. These features enable the capabilities of the CEMS 0500 to be used for a variety of messaging and override functions within a cable system or wherever audio/video messaging is required.

Installation

Mounting:

The CEMS 0500 unit requires 1¾ inches high of 19-inch rack space. Access to a 120 VAC outlet or power strip is required for the wall mount power supply.
Connections are made to the instrument's rear panel as illustrated on page 6.

Power Unit:

The CEMS 0500 is powered by a 120 VAC external, wall plug power unit. The unit supplies +12V at 125 mA, and is connected to the CEMS 0500's PWR jack.

Reset Push Button:

A reset pushbutton is provided on the rear panel of the unit. The CEMS 0500 must be reset when the mode select switches have been changed.

Video Connections:

A baseband video signal from a video source is connected to the "IN" BNC connector. The video signal to be routed to a modulator or scrambler is connected to the video "OUT" BNC connector.

Note: In the active mode, the Video Input signal is terminated with 75 Ω. Video output signals should be terminated with 75 Ω.

Whenever power to the CEMS 0500 is disconnected, or when the unit is NOT in the override mode, the video IN signal is connected directly to the video OUT connector.

Video Output Level:

The video output level is factory set and should not need adjustment. When power is removed from the unit the video output is connected directly to the input via relay contacts. When power is connected, the video output level should be the same as the video output without power.

Video output level may be adjusted with potentiometer R18 on the PC board. Rotate the control counter-clockwise to increase the video output signal.

Auxiliary Video:

The AUX video input is provided as an alternate video source that may be used to replace the primary video source whenever an alert or override is in effect. The auxiliary video requires a baseband signal connected to the AUX connector, this signal is terminated in 75 Ω.

Baseband Audio Connections:

Six position screw type terminal plugs are provided for connecting balanced or unbalanced audio signals. Provisions are made to accommodate both mono and stereo channel signals, refer to the pictures on page 6.

Corresponding audio input and output signals (i.e. +, -, and shield ground) are provided for left and right balanced audio. Typically if monaural audio is used, the left connector terminal is wired with the channel's audio signal. If stereo audio is used then the right connector would be used for the second audio signal.

Note: The audio inputs are terminated with 600 Ω. Audio outputs should be terminated with 600 Ω.

EAS Audio:

The EAS override audio signal from the EAS decoder is a monaural signal and is connected to the EAS IN connections by a six-position screw type terminal plug. EAS audio is unbalanced.

Relay - EAS override:

A contact closure is provided for override control and may be used to change a channel modulator input source, or used to switch a modulator's input channel from a processed video input to an alternate input displaying EAS information.

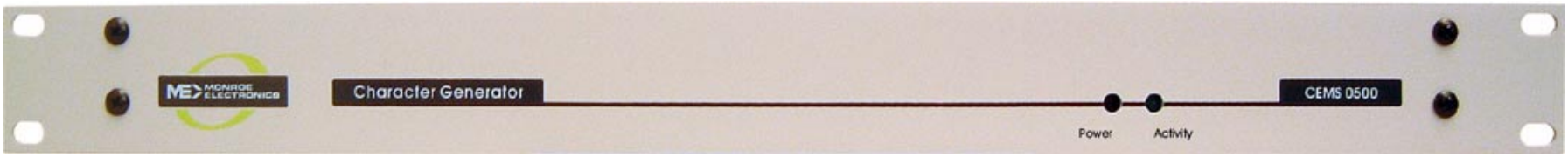
The relay connection provides a normally open and normally closed contact that is activated when an override condition exists. Relay connections are made using a six-position screw type terminal plug.

Relay - Aux:

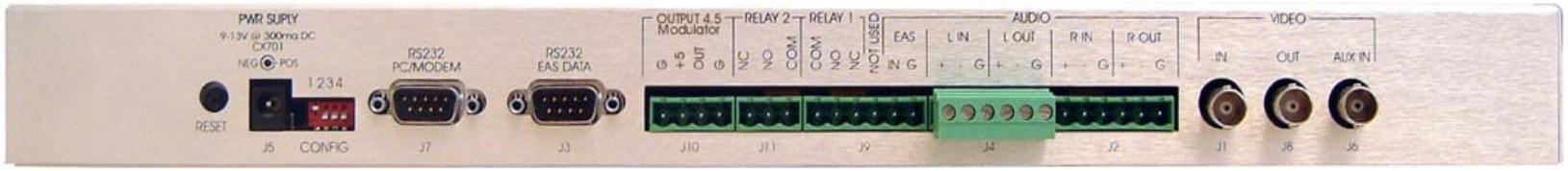
The AUX relay may be activated by commands from an external device. The relay connection provides a normally open and normally closed contact. Connections are made using a three-position screw type terminal plug.

Mode Switches:

Mode switch settings determine the display format that will be produced by the CEMS 0500 during an EAS alert. See section "EAS Override Operation".


MONROE ELECTRONICS
Character Generator
CEMS 0500
Power
Activity

Front


PWR SUPLY
9-13V @ 300ma DC
CX701
NEG POS
RESET
J5
1 2 3 4
CONFIG
RS232
PC/MODEM
J7
RS232
EAS DATA
J3
OUTPUT 4.5
Modulator
G +5 OUT G
J10
RELAY 2
N.C N.O COM
RELAY 1
COM N.O N.C
NOT USED
J11
J9
AUDIO
EAS
IN G
L IN
+ - G
L OUT
+ - G
R IN
+ - G
R OUT
+ - G
J4
J2
VIDEO
IN
OUT
AUX IN
J1
J8
J6

Rear

EAS Override Operation

When no power is supplied to the rack or when there is no override condition in progress, the VIDEO IN signal is connected directly to the VIDEO OUT connector via a normally closed relay contact. Audio is also directly connected Audio In to Audio Out. A description of the operation of the CEMS 0500 when an EAS condition is received follows.

EAS Video Operating Modes:

When EAS transmissions are received, the CEMS 0500 will automatically display the EAS text as a videotext page or text crawl, on either the primary or auxiliary video signals. Selection of the display mode is determined by the binary selection of four switches located on the rear panel. Display mode selection should be made at the time of installation.

The following list details the display mode selected by each switch setting. The switch settings are illustrated as a group of four switches, with each switch number shown when the switch is in the “OFF” i.e. up position. Whenever the mode switches have been changed the reset pushbutton must be depressed to update the switch configuration.

Mode	Switches	Display mode
Mode 1	(1 - - -)	Full screen videotext replacing the primary video signal
Mode 2	(- 2 - -)	Videotext overlaid on the primary video signal,
Mode 3	(1 2 - -)	Videotext overlaid on the auxiliary video signal.
Mode 4	(- - 3 -)	Text crawl displayed at the top of the primary video signal.
Mode 5	(1 - 3 -)	Text crawl displayed at the top of the auxiliary video signal.

When an EAS transmission has been received the CEMS 0500 will operate as follows:

Full screen override or Videotext Overlay Modes

a.) The text message received from the EAS decoder will be displayed as selected by the mode switch.

b.) The override relay will be activated (contact closed)

c.) The EAS audio will be played, consisting of:
1. Three bursts of data, signaling EAS Header Information,

2. An audio tone, optional.
3. An audio message, optional.
4. Three bursts of data, signaling an End on EAS Message.

d.) Upon completion of the audio signal, the override condition will be reset, primary video and audio signals will be restored and the override relay de-activated.

Text Crawl on the Primary or Auxiliary Video Signals.

a.) The text message received from the EAS decoder will be displayed as a crawl at the top of the selected video source (primary or auxiliary.)

b.) The override relay will be activated (contact closed)

c.) The EAS audio will be played, consisting of:

1. Three bursts of data, signaling EAS Header Information,
2. An audio tone, optional.
3. An audio message, optional.
4. Three bursts of data, signaling the End of EAS Message.

d.) Upon completion of the audio signal, the audio override condition will be reset, and the channels audio restored for the selected channel (primary or auxiliary.)

e.) When the text crawl has repeated displaying the text twice, the primary video signal will be restored and the override relay de-activated.

Audio Override:

When the CEMS 0500 is NOT in the override condition, the channel's audio signals are directly connected between the inputs and outputs via normally closed relay contacts.

Whenever an audio override condition is initiated, a relay disconnects the channel's audio input(s) and connects the EAS audio signal to the audio output signals.

Indicators

Indicator lights are provided on the front panel to signal when power is applied to the unit (POWER-RED) and when the unit is in the override mode (ACTIVITY-GREEN). Refer to the pictures on page 6.

Command Mode Operation

The CEMS 0500 is controlled by command strings transmitted from a PC or other data device. Command strings are transmitted to the CEMS 0500 via the PC/modem connector. Data transmissions are at 9600 baud asynchronous, 8 bits, no parity, and 1 stop bit.

Command strings may be entered manually using a PC with a terminal program such a ProComm, Qmodem or Hyperterminal. When connected, entering a "**?**" will display the following Command & Control menu which summarizes the operational features which may be activated.

CEMS 0500 Command & Control Menu

String Commands

#	Placed at the start of a command string.
^]	(Ctrl]) Entered to transmit the command string.
Tx..x@	Text for display, use { } to blink.
Mn	Display mode - 1=page, 2-crawl high, 3-crawl low, 4-caption.
Cn	Color selection (page mode) - 1-blue, 2-green, 3-red, 5-overlay.
An	Audio override flag - 0=inactive, 1=active.
Xn	Activate relay 1 - 0=inactive, 1=active.
Yn	Activate relay 2 - 0=inactive, 1=active.
Pnn	Display count, P99= continous.
Sn	System default messages - S1.....S8, SC.
Dn	Video source selection: P-primary channel video, A-Auxiliary video during text displays.
E	Execute command setup.
R	Reset conditions.

Example: To enter string - #(options)^] i.e. #Ttext@M1C5P11A1X1E^]

Direct Commands

/	Activate audio override
\	De-activate audio override
V	Transmit software Version to Terminal Port
?	Display command and control menu.

Command strings are explained in greater detail in the next section.

String Commands

String commands are used to setup and activate the operational features of the CEMS 0500. Using these commands, text may be displayed in page, overlay, crawl or caption formats, on colored backgrounds or overlaid on video, relays may be activated, audio overrides activated and video channel selected. The following summarizes the command functions, as they would be entered using a PC with a terminal program:

#	Used to start entering a command string, to exit the entry mode type "Esc."
^] – Ctrl]	Used to terminate the command string.
Tx..x@	The first occurrence of a "T" in the command string, indicates that display text follows. The text stream is terminated by the "@" character.
Mn	Display Mode, selects how the text will be displayed. M1 – Page or multi-page mode of videotext. M2 – Crawled text along the top of the display. M3 – Crawled text along the bottom of the display. M4 – Two lines of captioned text at the bottom of the display.
Cn	Color selection for background in videotext page mode (M1) C1 – Blue background C2 – Green background C3 – Red background C5 – Text is overlaid on video signal
An	Arms the audio override function – see "audio override activation" A1 – Audio override armed A2 – Audio override disabled
Xn	EAS Relay control X1 – Enables EAS relay to activate with the Execute command X0 – Disables EAS relay
Yn	AUX Relay control Y1 – Enables AUX relay to activate with the Execute command. Y0 – Disables AUX relay
Pnn	Sets the number of times the text display will be repeated. P02 – Text will be displayed twice. P10 – Text will be repeated ten times. P99 – Text displayed continously until terminated by command.

Sn A selection of canned messages, provided for testing purposes.

Dn Selects the video source to be displayed with text
DP – Primary video channel
DA – Auxilary video channel

E Execute command - when included within the command string will cause the display settings to be invoked immediately when the string is completed.

Note: Display settings may be pre-entered using a command string without the Execute command. The Execute command may be entered later as a single item string.

R Reset command – used to clear any pre-entered selections.

Direct Commands

Direct commands are single character commands that are immediately activated.

/ Activates audio override, if armed by an “A1” in a command string.

\ De-activates the audio override.

V Outputs the software version via the Terminal port.

? Displays the Command & Control Menu.

Optional “Message Center” Software

“Message Center” is Windows based software designed to facilitate selection and insertion of the command strings that control the CEMS 0500. “Message Center” eliminates meticulous manual entry of command strings making message insertion a quick and easy task.

The CEMS 0500 with “Message Center” is ideal for broadcasting local alerts, EAS alerts for Cable TV systems, and for generating custom messages for insertion in hotels or apartment complexes.

For more information regarding “Message Center” please contact us at 1-800-821-6001.

Connections to the MIP-921e EAS Decoder

There are two cables that connect the MIP-921e to the CEMS 0500 as follows:

1. Audio Cable CX508S

   One stripped end connects directly to the EAS Audio terminals of the 6 position terminal strip at the rear of the CEMS 0500.

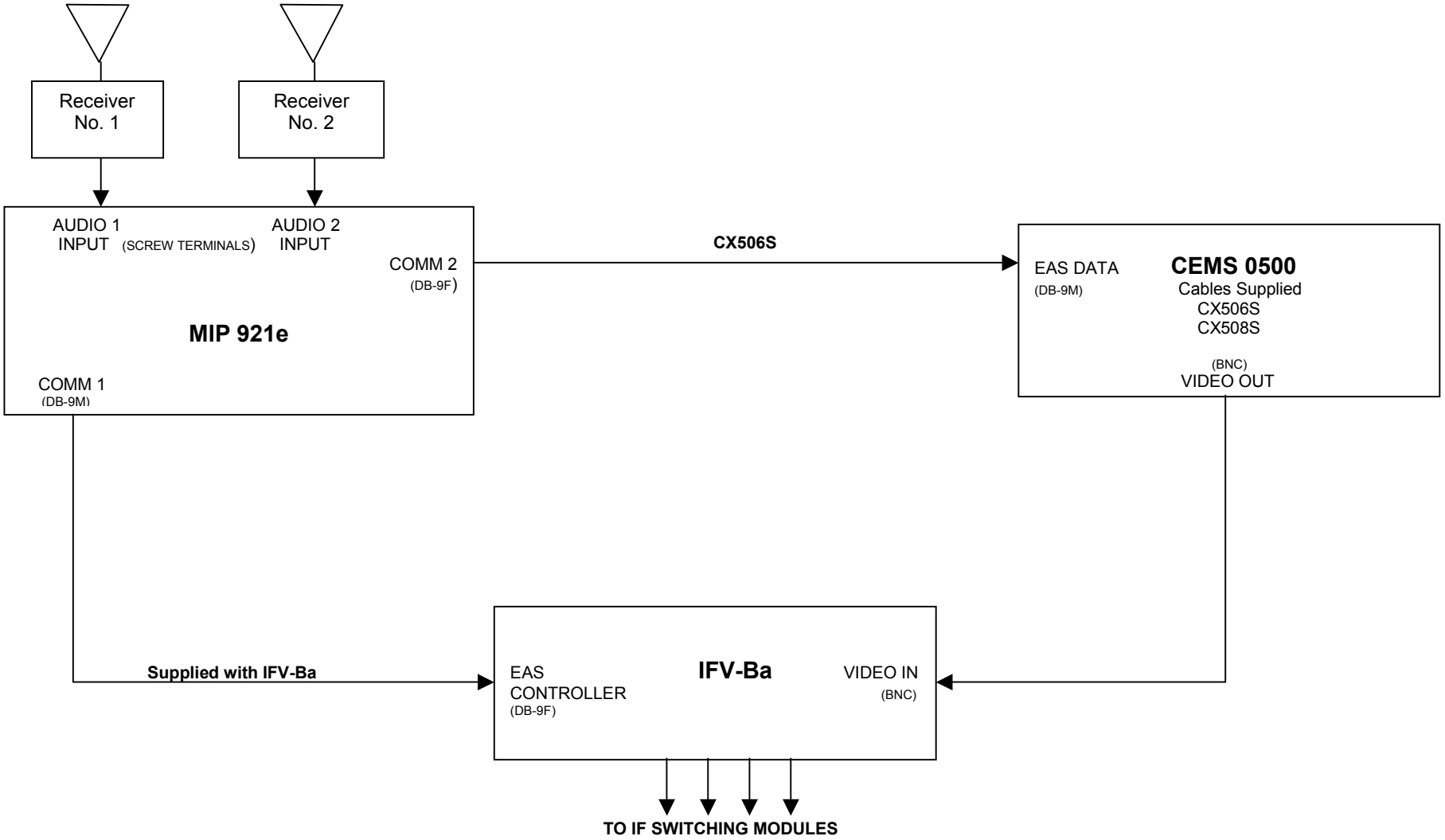
   The other stripped end connects to the Audio Out terminals on the 12 position 1/0 terminal strip on the MIP-921e.

2. The Data Cable CX506S (Null modem)

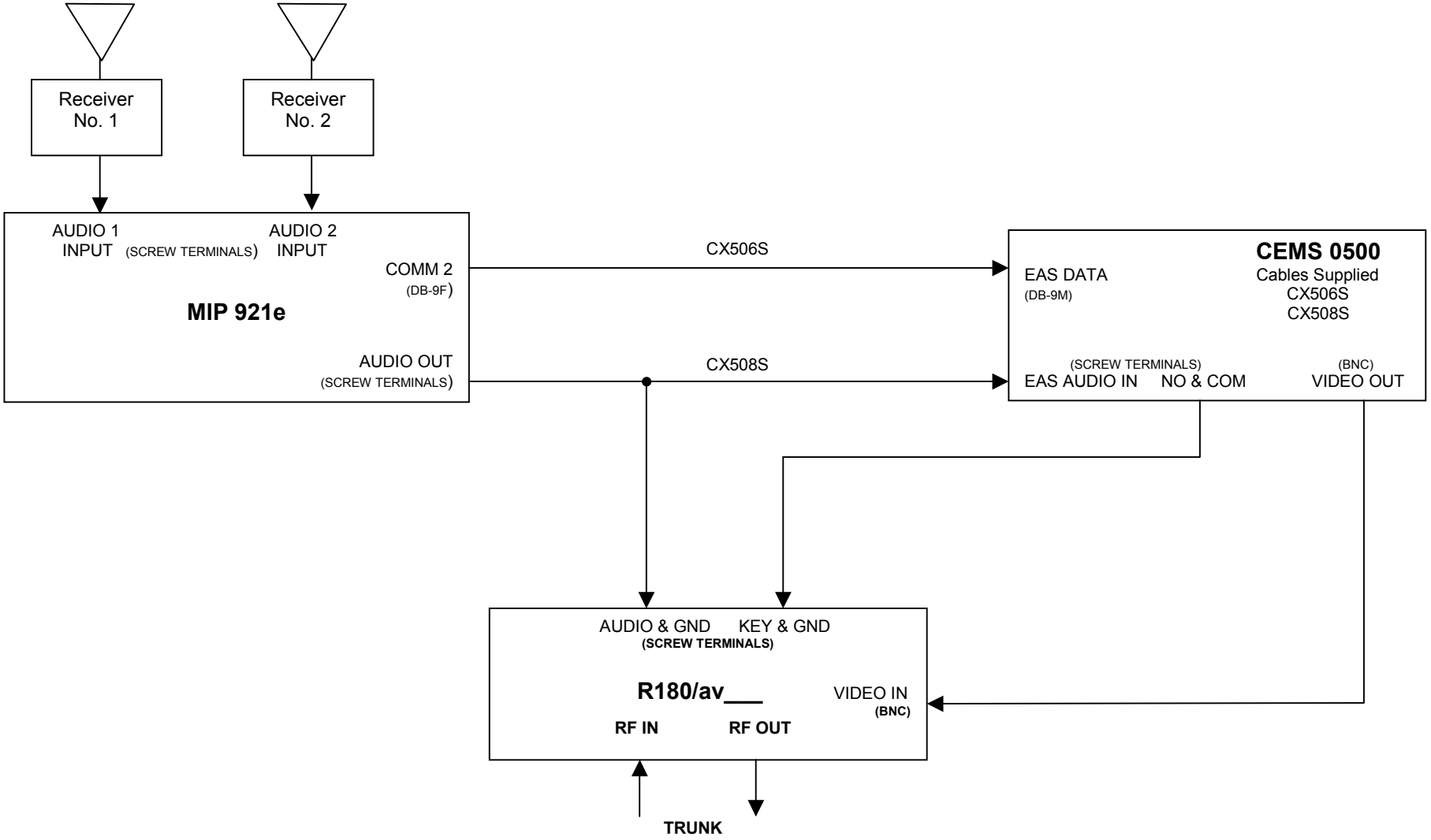
   The DB9 female connector attaches to the EAS Data connector on the rear of the CEMS 0500.

   The DB9 male connector connects to the COMM 2 port on the MIP-921e.

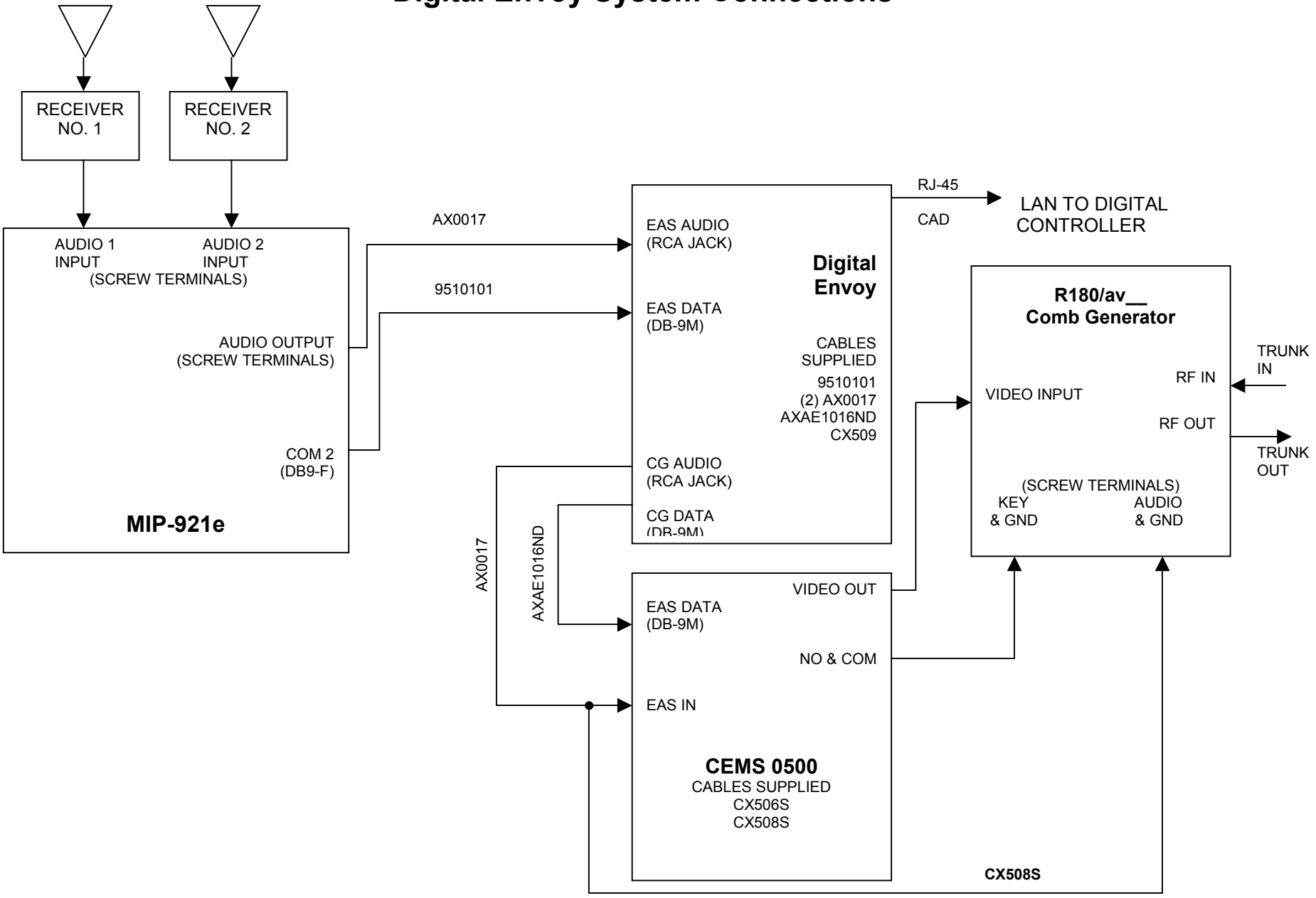
IF System Connections



Comb Filter Generator System Connections



Digital Envoy System Connections



Baseband System Connections